Goddard Procedures and Guidelines

Responsible Office: 500/Applied Engineering and Technology Directorate

Title: DESIGN VALIDATION

Preface

P1. PURPOSE

This procedure defines the process for the validation of GSFC products.

P2. APPLICABILITY

This procedure applies to the development of all Goddard Space Flight Center (GSFC) products and processes covered by the scope of the GSFC Quality Management System.

P3. AUTHORITY

NPD 8730.3, NASA Quality Management System Policy (ISO 9000)

P4. REFERENCES

a. GPG 1310.1, Customer Commitments and Review

b. GPG 5330.1, Product Processing, Inspection, and Test

c. GPG 5340.2, Control of Nonconforming Product

d. GPG 8700.1, Design Planning and Interface Management

e. GPG 8700.2, Design Development

f. GPG 8700.4, Technical Review Program

P5. CANCELLATION

GPG 8700.3, Design Validation

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EXPIRATION DATE: May 7, 2004

P6. RECORDS

Quality Record Title	Record Custodian	Retention
Work Order Authorization (WOA) or equivalent for software	Product Design Lead (PDL)	NASA Records Retention Schedule (NRRS) 8/5A2 Project Test, Engineering, and Evaluation Files. Records may be retired to a Federal Records Center (FRC) when 2 years old. Destroy when 15 years old.

Procedure

1. DEFINITIONS

a. Validation - In design and development, validation is the process of examining the product to determine conformity with user functional requirements. This includes product inspections, functional and operational tests, and environmental simulations.

b. Product Design Lead (PDL) - The manager or leader with overall responsibility for managing the design activity, managing the technical and organizational interfaces identified during design planning, and where required, forming and leading the Product Design Team. The term refers to flight project managers, mission managers, instrument managers, subsystem technical managers, integrated product development team leaders, lead engineers, etc.

2. IMPLEMENTATION

2.1 Validation Plan Review/Update

Prior to product validation, the PDL shall ensure that the Product Validation Plan is complete and accurate, updating it as necessary (see GPG 8700.1 and GPG 8700.2).

2.2 Product Validation

2.2.1 The PDL/PDT shall perform product validation under customer defined operational, storage, or other conditions, as required. Note that for product validation to be complete, intermediate validation activities may be required on discrete portions (e.g. subassemblies, assemblies, components) of the product, in addition to the final validation on the complete, integrated product.

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2.2.2 Validation activities shall be planned and documented using the Work Order Authorization (WOA) form per GPG 5330.1. Nonconformances found during validation shall be documented and processed in accordance with GPG 5340.2.
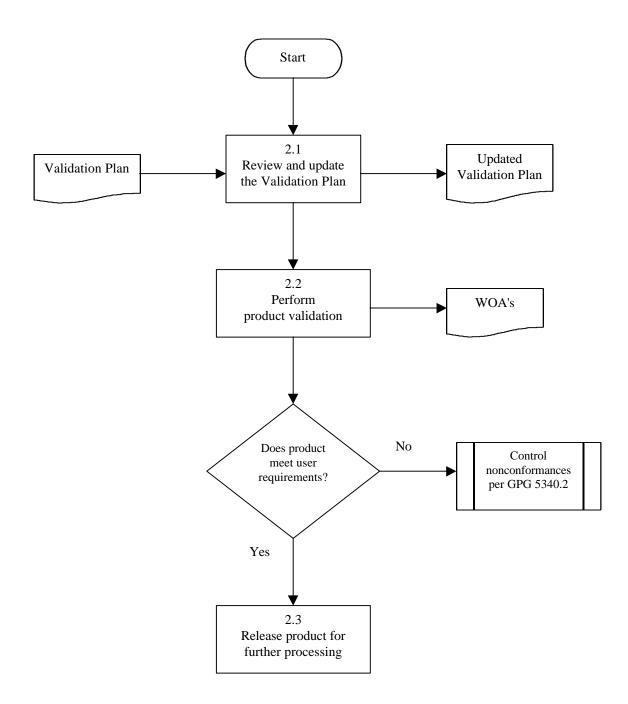
2.3 Product Release

The PDL shall document the successful completion of validation and release the product for further processing in accordance with the design plan (see GPG 8700.1) and customer requirements (see GPG 1310.1).

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Design Validation Flowchart

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                          ┌──────────────┐
                          │    Start     │
                          └──────┬───────┘
                                 │
                                 ▼
┌──────────────────┐    ┌──────────────────┐    ┌──────────────────┐
│ Validation Plan  │───▶│       2.1        │───▶│    Updated       │
│                  │    │ Review and update│    │ Validation Plan  │
└──────────────────┘    │ the Validation Plan│   └──────────────────┘
                        └────────┬─────────┘
                                 │
                                 ▼
                        ┌──────────────────┐    ┌──────────────────┐
                        │       2.2        │───▶│     WOA's        │
                        │     Perform      │    │                  │
                        │ product validation│   └──────────────────┘
                        └────────┬─────────┘
                                 │
                                 ▼
                            ╱─────────╲                    No    ┌──────────────────┐
                          ╱  Does product ╲ ──────────────────▶ │    Control       │
                         ⟨   meet user      ⟩                    │ nonconformances  │
                          ╲ requirements? ╱                      │ per GPG 5340.2   │
                            ╲─────────╱                          └──────────────────┘
                                 │
                               Yes
                                 │
                                 ▼
                        ┌──────────────────┐
                        │       2.3        │
                        │ Release product for│
                        │ further processing│
                        └──────────────────┘
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CHANGE HISTORY LOG

Revision	Date	Description of Changes
Baseline	8/12/98	
A	5/7/99	Header and footer format change. Title change of GPG 1310.1 reference. Title change of GPG 5330.1 reference. Deleted reference to GPG 8730.4 (cancelled). Clarified validation requirements and included documentation requirements in step 2.2. Indicated responsibility for maintenance of quality records. Moved quality records requirements to P6. Revised flow chart.